CLAIMS

This claim listing replaces all prior claim listings in the application:

1. (Previously presented) A method of introducing microorganisms into a heap of material for bio-assisted heap leaching comprising:

    a) preparing microorganisms substantially without exopolymers on their external cell walls;
    b) adding microorganisms prepared according to step a) to the heap; and
    c) reactivating, with or without assistance, the production of exopolymers on the external cells walls of the microorganisms to form activated microorganisms,

    wherein the activated microorganisms accelerate the dissolution of minerals by oxidation reactions.

2. (Original) A method as claimed in claim 1 in which step a) includes exposing the microorganisms to a low nutrient environment or starving the microorganisms.

3. (Original) A method as claimed in claim 2 in which the microorganisms are starved by limiting the amount of carbon available to the microorganisms.

4. (Previously presented) A method as claimed in claim 1 in which step b) includes one or more of adding microorganisms to the heap during formation thereof, drip irrigation of the heap, sprinkling of the heap, and pressurized irrigation of the heap.

5. (Previously presented) A method as claimed in claim 4 in which the assisted re-activation comprises exposing the microorganisms to a nutrient rich environment.

6. (Original) A method as claimed in claim 5 in which the step of exposing the microorganisms to a nutrient rich environment includes one or more of:

    a) embedding solid nutrients in the heap;

b) irrigating the heap with a nutrient rich solution;
c) aerating the heap with nutrient rich gas; and
d) aerating the heap with a gas enriched in carbon dioxide.

7. (Original) A method as claimed in claim 6 in which includes the step of embedding a carbon source in the heap.

8. (Original) A method as claimed in claim 7 in which the carbon source comprises carbonate.

9. (Original) A method as claimed in claim 6 in which the solid nutrients of step a) comprises slow release nutrients.

10. (Original) A method as claimed in claim 6 in which the gas of the step c) is enriched with one or more of a nutrient aerosol or ammonia.

11. (Previously presented) A method as claimed in claim 1 in which the assisted re-activation comprises exposing the microorganisms to a nutrient rich environment.

12. (Previously presented) A method as claimed in claim 11 in which the step of exposing the microorganisms to a nutrient rich environment includes one or more of:

a) embedding solid nutrients in the heap;
b) irrigating the heap with a nutrient rich solution;
c) aerating the heap with nutrient rich gas; and
d) aerating the heap with a gas enriched in carbon dioxide.

13. (Previously presented) A method as claimed in claim 12 which includes the step of embedding a carbon source in the heap.

14. (Previously presented) A method as claimed in claim 13 in which the carbon source comprises carbonate.

15. (Previously presented) A method as claimed in claim 12 in which the solid nutrients of step a) comprises slow release nutrients.

16. (Previously presented) A method as claimed in claim 12 in which the gas of the step c) is enriched with one or more of a nutrient aerosol or ammonia.

17. (Previously presented) A method as claimed in claim 1 in which the un-assisted re-activation includes re-activation due to one or more of prevalent conditions in the heap and natural gas flow through the heap.

18. (Previously presented) A method as claimed in claim 17 in which the natural gas includes carbon dioxide.